

### REMARKS

Claims 1, 8 and 11 have been amended by adding new limitations. Claims 1, 8 and 11, further have been amended for clarification. Claims 5-7 have been amended to clarify meaning of "total amount". Claim 17 has been amended for clarification. New Claims 18-21 has been added. Support for the amendment to Claims 1, 8, and 11 is presented, for example, in the Specification (page 9, lines 24-25). Support for the amendments to Claims 5-7 is presented, for example, in Fig. 1. Support for the new claims is presented, for example, in the claims as previously presented. Thus, no new matter has been added. Applicants respectfully request the entry of the amendments and reconsideration of the present application in view of the amendments and the remarks set forth below.

#### Discussion of Claim Rejections Under 35 U.S.C. § 103

Claims 1-2, 5-8, 11, 14-17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Uber, III et al. (US5,840,026). Applicant respectfully submits that pending Claims 1-2, 5-8, 11, 14-17 are allowable over the cited reference as discussed below.

#### Discussion of Patentability of Independent Claims 1, 8, and 11

As amended herein, Claims 1, 8, and 11 recites among other things, "within a **predetermined injection time**" and "vertically moving said variable pattern depending on a total amount of the contrast medium to be injected into the subject". With respect to this recitation, the specification states, "...if the variable pattern is set according to a predetermined waveform as shown in FIG. 6, then the waveform of the variable pattern is vertically moved with **the injection time unchanged**, so that the area surrounded by the waveform and the x- and y-axes will be commensurate with the total amount of contrast medium to be injected" at page 12, lines 20-25.

In rejecting the claims, the Examiner asserts "No where in the specification does Uber disclose or even suggest altering the injection time as a whole." However, Uber discloses "The Electronic Control System...determines...injection parameters such as flow rates, volume..." (Column 5, lines 30-33), and also discloses "...modify the concentration of the contrast media, injection rate, and/or total volume during the

injection procedure.” (Column 3, lines 29-32). As the injection time is determined by the injection rate and volume, it is appear that Uber does disclose or suggest altering the injection time as a whole. Thus, the cited reference fails to teach these specific features of the subject matter in Claims 1, 8, and 11. Therefore, Applicant respectfully submits that no *prima facie* case of obviousness has been established with respect to Claims, 1, 8, and 11.

In the recent years, the performance of CT scanner has advanced, and available apparatus includes a high speed multi-slice CT scanner that allows short time diagnostics. While the period in which an enhancing effect is obtained may be shortened, the timing of starting CT scanning in relation to the time-contrast enhancement curve has become much more important. In the present invention, deviation of timing can be reduced. With the combination of the use of a high speed multi-slice CT scanner, the present invention allows further decrease of the amount of contrast medium to be injected.

Moreover, these features provide an unexpected advantage which further evidence the none-obviousness of the claimed invention. In particular, variations of the peak time in a time-contrast enhancement curve (i.e. time-CT value curve) will be small even if the amount of contrast medium is increased or decreased. In general, the scanning of CT apparatus starts after the CT value in the time-contrast enhancement curve reaches or exceeds beyond certain value. In this method, since the variation of the peak time in the time-contrast enhancement curve is small, scanning by the CT apparatus with the best timing for obtaining the most effective contrast enhancing effect is possible. Accordingly, there is no need for setting the margin for allowance in the time contrast enhancement curve that requires a redundant amount of contrast medium, and thus the amount of contrast medium to be injected can be reduced. (Page 13, lines 4-14). Therefore, even if *prima facie* case of obviousness were established, these unexpected results would rebut any such case. Applicant respectfully submits each of Claims 1, 8, and 11, is allowable over the cited references.

#### Discussion of Patentability of Dependent Claims

The rest of the rejected claims depend from base Claim 1, 8 or 11, and further define additional technical features of the present invention. In view of the patentability of their base

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claims, and in further view of the additional technical features, Applicants respectfully submit that the dependent claims are patentable over the prior art.

Discussion of Patentability of New Claim

The new claims depend from base Claim 1, 8 or 11. In view of the patentability of Claim 1, 8, or 11, Applicant respectfully submits the new claims are patentable over the prior art.

No Disclaimers or Disavowals


Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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